

METHOD AND SYSTEM FOR INTERFERENCE  
CANCELLATION FOR HIGH SPECTRAL EFFICIENCY  
SATELLITE COMMUNICATIONS

ABSTRACT OF THE DISCLOSURE

5                    Systems and methods for interference cancellation for high  
spectral efficiency satellite communications enabling efficient utilization  
of available bandwidth through overlapping adjacent channels. Data  
information is received along with noise information, and a filter bank is  
adapted to receive and filter the waveform and output channel infor-  
10 mation including a combination of data signals and adjacent channel  
interference signals. The filter bank is further adapted to provide  
estimated data signals and to calculate estimated interference signals.  
One or more interference generating processors are adapted to receive  
the calculated estimated interference signals to enable the interference  
15 generating processor to generate interference signals corresponding to  
the calculated estimated interference signals. The interference  
generating processor subtracts the interference signals from the  
estimated data signals in order to output relatively more accurate  
estimated data signals. A decision device is provided for use with the  
20 interference generating processors for estimating data signals in  
accordance with the relative ability of the interference processor to  
cancel interference with the estimated interference signals.